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A Preliminary List of American Species of Polygonum.

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The following list and notes are the results of some research on the genus *Polygonum* as occuring in America, and are preliminary to an exhaustive study of the morphology, histology and systematic classification of the genus.

The work was taken up at the suggestion of Dr. Britton and from a short study the suggestion proves to be a seasonable one, for it is time that some light should be thrown on the American species of this group of plants which is in such confusion and which has been so little understood by our best botanists.

The Columbia College Herbarium is especially advantageous for this work, for in it are preserved the collections and types of the late Dr. C. F. Meisner who spent so many years in the study of Polygoneæ. I have also been assisted much by Captain John Donnell Smith, Dr. Geo. Vasey and Dr. B. L. Robinson, all of whom have put their respective collections at my disposal.

The geographical distribution of the species is indicated by the citation of localities and collectors as represented in these four herbaria.

SECTION I.—BISTORTA.

1. Polygonum bistortoides, Pursh, Fl. Am. Sept. 271 (1814).

P. Bistorta, L. var. *oblongifolium*, Meisn., in D.C. Prodr. xiv. 126 (1856).

Colorado: Lake City (Pease); alpine parts of the Rocky Mountains (Parry); Wyoming: Yellowstone Park (C. H. Hall);

Nevada: Parley's Park, 6,000 ft. (Watson, 1068); Arizona: Williams (Rusby, 819); Mogollon Mountains (Mearns, 84); California: Santa Rosa Creek (Bigelow); foothills of the Sierra Nevada (Torrey, 428); Green Horn Mountains 6,000-7,000 ft. (Palmer, 99); Washington: Yakima Region (Tweedy).

Var. LINEARIFOLIUM (S. Wats.)

P. Bistorta, L., var. *linearifolium*, S. Wats. Bot. King's Exp. 317 (1871).

Nevada: E. Humboldt Mountains 9,500 ft. (Watson, 1069); Colorado: Pass Creek, Bridges Pass (Engelmann); Valley of the Lower Platte (Fremont).

Pursh in his Flora of North America published a *Polygonum bistortoides*, giving as its habitat the banks of the Missouri River. Later the plant was found throughout the west, though principally in the mountains. Very few authors accepted Pursh's opinion and name, and in subsequent publications the plant was referred to *P. Bistorta* of Europe. However, this disposal of the case is erroneous. Although the plant has the general appearance of the European species, it has enough constant characters to maintain it as a species as Pursh first ranked it.

Instead of the broadly ovate, cordate radical leaf of *P. Bistorta*, *P. bistortoides* has an oblong leaf, which is generally acuminate at the base. The achene instead of being oblong is narrowly obovoid with a narrower seed.

2. POLYGONUM VIVIPARUM, L. Sp. Pl. 360. (1753).

Iceland: (C. S. Smith); Greenland. Disco Island (Burk); Arctic America: (Parry, Richardson); Vermont: Mt. Mansfield (Pringle); New Hampshire: White Mountians, Alpine Garden (Schrenk), Great Haystack Mountain (Tuckerman); Colorado: Gray's Peak, 12,500 ft. (Letterman); Utah: Bear River Canon, 11,000 ft. (Watson); Oregon and Washington: (Wilkes U. S. Exp. 689); Alaska: St. Paul's Island (White); Juneau (Miss Cooley).

SECTION II.—PERSICARIA.

1. *Ocreæ setose or ciliate.*

3. POLYGONUM PERSICARIA, L. Sp. Pl. 361 (1753).

P. Valdivianum, Phil., according to specimen in Herb. J. Donnell Smith.

Introduced and naturalized in North and South America.

4. POLYGONUM RIVULARE, Phil. Linnæa, xxx. 199 (1859).

Chili: near Santiago, on the Mapocho River (according to Philippi).

This name is a homonym of *P. rivulare*, Roth, Nov. Pl. Sp. 206 (1821), and therefore if Philippi's species proves valid it will have to be changed.

5. POLYGONUM CAREYI, Olney in Proc. Prov. Franklin Soc., i. 29 (1847).

Maine: Orono (Fernald); Massachusetts: Amherst and Plainfield (Hitchcock); Rhode Island: Providence (Olney); New Jersey: Mickleton (Brinton); Pennsylvania: Pocono Mountain (Porter).

6. POLYGONUM PERSICARIOIDES, H.B.K. Nov. Gen. ii. 179 (1817).

South America: Argentine Rep. Mendoza (Gillies); Chili: Valparaiso (U. S. S. P. Ex. Exp)., Desert of Atacama (Morong, 1281); Peru: Lima (Wilkes' Exp.); Bolivia: Cochabamba, 7,000 feet (Bang, 1025); Mexico: Orizaba (Botteri, 584 and 254), San Luis Potosi (Schaffner, 883), Batopilas (Palmer, 137), Guaymas (Palmer, 211), Sonora (Thurber, 357); Texano-Mexican Boundary (Berlandier, 912 and 2342); Mexican Boundary Survey, 1183; New Mexico: San Pedro River (Wright, 1778); Texas: Dallas (Reverchon, 698). Reported from Austin County, Texas, by J. M. Holzinger (Bot. Gaz. xvii. 295).

7. POLYGONUM SEGETUM, H.B.K. Nov. Gen. ii. 177 (1817).

P. segetum, H.B.K., var. *genuinum*, Meisn. in D.C. Prodr. xiv. 121 (1856).

P. Ludovicianum, Meisn., in D.C. Prodr. xiv. 116 (1856).

Louisiana (Teinturier); Cuba (Ramon de la Sagra); South America: Columbia (Funcke and Schlim, 250).

To this species must be referred *P. Ludovicianum*. Meisner's argument for *P. Ludovicianum* will not stand proving, because his principal character breaks down on the type specimen. The plant is identical with *P. segetum*. The only distinctive character given is simply pubescent peduncles and pedicels in place of glandular ones. The diagnosis is incorrect, however, as some glands do exist on the original specimen.

8. POLYGONUM SETACEUM, Baldw. in Ell. Sketch, i. 455 (1817).

North Carolina (Curtis); Florida (Chapman); Louisiana: Feliciana (Carpenter, 1); Alexandria (Hale).

9. POLYGONUM HIRSUTUM, Walt. Fl. Càrol. 132 (1788).

P. hirsutum, Walt., var. *dasyphyllum*, Meisn. in D.C. Prodr. xiv. 103 (1856).

Middle Florida (Chapman); Eastern Florida (Leavenworth); Mayport and Jacksonville (Keeler); Georgia to North Carolina (fide Meisner).

Var. GLABRESCENS, Meisn., in D.C. Prodr. xiv. 103 (1856).

Northern Florida at Lake Jacnony (Rugel, 86); lake near Tallahassee (Rugel).

10. POLYGONUUM OPELOUSANUM, Riddell, New Orleans Med. Surg. Journ. viii. 760 (1852), name only.

Plant apparently two to three feet tall, slender, erect and sparingly branched. Leaves narrowly linear-lanceolate to almost linear, two to four inches long, sessile, ciliate on the margins and both sides of the mid-rib, sheaths strigose and long-ciliate; spikes one to one and a half inches in length, rather loosely flowered; bracts densely bearded with bristles; flowers white; calyx five-parted; stamens eight (?); style three-parted, short; achene triquetrous, smooth.

Louisiana: Low prairies near Opelousas (Carpenter, 26).

The species here proposed is most closely related to *P. hydropiperoides*, from which it differs by its smaller size, more slender habit, and the conspicuously setose bracts.

11. POLYGONUM HYDROPIPEROIDES, Michx. Fl. Bor. Am. i. 239 (1803).

P. virgatum, C. and S. Linnæa, iii. 45 (1828).

P. mite, Pers. Syn. i. 440 (1805).

P. australe, Thieb. in Pers. Syn. i. 440 (1805).

Vermont, Charlotte (Pringle); Middlebury (Brainerd); Massachusetts: Essex Co. (Oakes); Rhode Island: Providence (Olney); New York: Bloomingdale (Torrey); Pennsylvania: Easton (Porter); Dauphin and Luzerne Cos. (Small); North Carolina (Hunter); Rowan Co. (Small and Heller); Florida: Mayport and Jacksonville (Keeler); Duval Co. (Curtiss, 2,402 and 2,411 distributed as *P. setaceum*, Baldwin); Lake Jacnony (Rugel, 85); Western Alabama (Rugel); Wilcox Co. (Buckley, 1); Mexico: Orizaba (Müller); Brazil: Serra de Argaos (Gardner, 599).

Var. STRIGOSUM, n. var.

One and a half to two feet tall. Stem clothed with stout, appressed hairs; leaves lanceolate to linear-lanceolate, obtuse, strigillose; sheaths averaging half an inch long, densely strigose and long-ciliate; bracts strigillose and ciliate; flowers whitish.

Indiana: Indianapolis, along the White River (Britton); West Virginia: Preston Co., along the Cheat River (J. D. Smith); Canada: Gatineau River (Macoun).

This well-marked variety we now have from three separate localities. Its almost white flowers, dense strigoseness and heavier habit separate it very clearly from the typical form.

12. POLYGONUM HYDROPIPER, L. Sp. Pl. 361 (1753).

P. Hydropiper, L., var. *vulgare*, Meisn., in D.C. Prodr. xiv. 109 (1856).

Canada to Florida, and westward across the continent. Said to be native northward. Clearly naturalized from Europe in the Eastern and Middle States.

13. POLYGONUM EPILOBIOIDES, Weddell, Ann. Sc. Nat. 3d ser. xiii. 254 (1849).

Brazil: Matto-Grosso, on the Cabacal (according to Weddell).

14. POLYGONUM PARAGUAYENSE, Weddell, Ann. Sc. Nat. 3d ser. xiii. 253 (1849).

Brazil: Matto-Grosso, on the Paraguay River (according to Meisner.)

In every case in which Meisner had occasion to refer to this species, he was inclined to be very skeptical about its validity. It is admitted here in the hope that some certain facts concerning it may be obtained. Dr. Morong did not meet with it in Paraguay.

15. POLYGONUM MINUS, Huds. Fl. Angl. 148 (1762).

Chili (Philippi).

16. POLYGONUM PUNCTATUM, Ell. Sketch, i. 455 (1817).

P. acre, H.B.K. Nov. Gen. ii. 179 (1817), not Lam.

P. hydropiperoides, Pursh, Fl. Amer. Sept. i. 270 (1814), not Michx.

P. hydropiper, Michx. Fl. Bor. Am. i. 238 (1803), not L.

P. acre, H.B.K., var. *confertiflorum*, Meisn. in D.C. Prodr. xiv. 108 (1856).

Common and variable throughout America.

Var. LEPTOSTACHYUM (Meisn.).

P. acre, H.B.K., var. *leptostachyum*, Meisn. in D.C. Prodr. xiv. 108 (1856).

Vermont: Clarendon (Brainerd); New Jersey: Cedar Swamp (Torrey); Pennsylvania: Easton (Porter); Perry Co. (Small); Virginia: Cumberland Gap (Small); Florida (Riehl, 311); Missouri: St. Louis (Engelmann); California: at the Geysers (Torrey); New Granada: La Paila (Holton, 274).

17. POLYGONUM ACUMINATUM, H.B.K., Nov. Gen. ii. 178 (1817).

P. cuspidatum, Willd., ex. Spreng. Syst. ii. 256 (1825).

P. erectum, Vell. Fl. Flum. iv. t. 42? (1827).

P. acuminatum, H.B.K., var. *Humboldtii*, Meisn. in Fl. Bras. v. 14, t. 4. f. i. (1855).

West Indies: Cuba (Wright, 2,245); Porto Rico (Sintenis, 1715 and Eggers); Guatemala (Bernoulli, 1065); Surinam (Hostman, 473); Brazil: Minas Geraes (Regnell, 234).

Var. BRACHYSTEMON, Meisn. in D.C. Prodr. xiv. 114 (1856).

Brazil: Pernambuco (Gardner, 1123); Surinam (Hostmann and Keppler, 473).

Var. MICROSTEMON, Meisn. in Mart. Fl. Bras. v. 14, t. 4, f. 2 (1855).

Brazil: Bahia (Martius); Paraguay: Pilcomayo River (Morong, 1060).

Var. WEDDELLII, Meisn. in D.C. Prodr. xiv. 114 (1856).

Southern Brazil, according to Meisner. Guatemala: Coban, 4,300 feet (Tuerkcheim, 517).

18. POLYGONUM HISPIDUM, H.B.K. Nov. Gen. ii. 178 (1817).

Cuba (Wright, 3669); New Granada: La Paila (Holton, 273); Brazil: Pernambuco (Gardner, 1122); Paraguay: Pilcomayo River (Morong, 1026).

2. *Ocreæ eciliate or sometimes slightly ciliolate.*

19. POLYGONUM PENNSYLVANICUM, L. Sp. Pl. 362 (1753).

Canada to Florida, westward to Minnesota and Texas.

20. POLYGONUM MEXICANUM, n. sp.

P. Pennsylvanicum, S. Watson, in Proc. Am. Acad. Arts and Sci. xviii. 147 (1883).

Plant erect, branched, apparently three to four feet high, smooth except the peduncles and pedicels, which are glandular;

leaves linear-lanceolate to narrowly linear, two to four and a half inches long, short-petioled, ciliate-margined, punctate; sheaths truncate, smooth, one inch long; flowers light rose-color, in dense spikes, which are one inch long and erect; calyx five-parted; stamens six to eight; style two-parted, long; achene lenticular, broadly ovate, long-pointed, reticulated and dull.

Mexico: Sonora (E. K. Smith), San Luis Potosi (Schaffner, 882), Jalisco (Pringle, 5186).

This species is most closely related to *P. Pennsylvanicum*, from which, however, it differs in a marked degree in its leaves and flowers, but especially in its broadly ovate and dull achene.

21. POLYGONUM PRINGLEI, n. sp.

Plant mostly erect, branching, two to five feet high, the lower part of the stem inclined to be decumbent and to root at the nodes, glandular throughout, peduncles and pedicels densely glandular. Leaves linear-lanceolate to linear, two to four inches long, subsessile, acuminate, ciliate-margined, minutely punctate; sheaths loose, slightly rough; flowers light pink, in rather loose, thick, cylindrical spikes, which are one inch long, or less, and erect; calyx 5-parted, stamens generally eight; style two or three-parted, rather short; achene lenticular or concave-triquetrous, broadly obovate, short-pointed, smooth and shining.

Mexico: San Luis Potosi, Las Canoas (Pringle, 5183).

This species collected by Mr. Pringle, is a beautiful and peculiar plant. Its stem is very glandular down to the root. The spikes are usually thick and the flowers of a light-rose color. As is the case in a number of other species, *P. Pringlei* has a two or three-parted style, and consequently lenticular and triquetrous achenia. In aspect this species is most nearly related to *P. lapathifolium*.

22. POLYGONUM LAPATHIFOLIUM, L. Sp. Pl. 360 (1753).

P. Pennsylvanicum, Curt. Fl. Lond. t. 73 (1777), not L.

P. nodosum, Pers. Syn. i. 440 (1805).

P. utriculatum, Remy in Gay, Fl. Chili, v. 267 (1849).

This species seems to be introduced throughout North America, Mexico and West Indies. It is remarkably variable. Extreme forms seem to furnish sufficient characters to hold *P. nodosum* separate from *P. lapathifolium*, but the close study of a large number of specimens seems to indicate that none of the characters maintain themselves.

23. POLYGONUM INCARNATUM, Ell. Sketch i. 456 (1817).

P. lapathifolium, L. var. *incarnatum*, S. Wats. in A. Gray, Man. Ed. 6, 440 (1890).

Vermont: Middlebury (Brainerd); New York: Coney Island (Britton); New Jersey: Lake Grinnell (Britton); Pennsylvania: Harrisburg (Small); Illinois: Rockford (Goddard); Kentucky: Lexington (Short); Florida (Chapman); Louisiana: Red River (Hale); Feliciana (Carpenter).

It is better and more consistent to hold *P. incarnatum* as a species than to reduce it to a variety of *P. lapathifolium*. It is a native of North America, and has a well marked and restricted range, whereas *P. lapathifolium* is most likely an introduced species, and has become of a much more cosmopolitan character.

24. POLYGONUM DENSIFLORUM, Meisn. in Mart. Fl. Bras. v, 13 (1855.)

P. acuminatum, Meisn. Mon. 78, in part (1826).

P. densiflorum, Meisn. var. *imberbe*, Meisn. in D.C. Prodr. xiv. 121 (1856).

P. glabrum, Authors, not Willd.

Florida (Chapman 91); Lake Monroe (Rugel, 199); Louisiana: Alexandria (Hale); New Orleans (Riddell; Ingalls); Martinique (Jardin, 302); British Guiana (Jenman, 1628).

Var. CILIOLATUM, Meisn. in D.C. Prodr. xiv. 121 (1856).

British Guiana: Lama (Jenman, 4697); Hooroobea (Jenman, 5114).

Polygonum glabrum, a species related to the foregoing has long been credited to America. This is due to the erroneous determination of certain forms of *P. densiflorum* and *P. lapathifolium*. *P. glabrum* is an East Indian species, and after a careful study and comparison of a large amount of American material with the true eastern *P. glabrum*, all the American specimens refered to *P. glabrum*, prove to be forms of *P. densiflorum* and *P. lapathifolium*.

25. POLYGONUM DIOSPYRIFOLIUM, C. and S. Linnæa, iii. 47 (1828).

Brazil: prov. Rio Janeiro and Minas (according to Meisner).

26. POLYGONUM PERUVIANUM, Meisn. in D.C. Prodr. xiv. 122 (1856).

Peru (Matthews, 3120, according to Meisner).

27. POLYGONUM FERRUGINEUM, Weddell, Ann. Sc. Nat. 3d ser. xiii. 252 (1849).

P. spectabile, Mart. ex Meisn. Fl. Bras. v. 13, t. 3 (1855).

P. gummiferum, Weddell, loc. cit. (1849)?

P. glabrum, C. and S. Linnæa, iii. 46 (1828)?.

Eastern Brazil: Pernambuco (Gardner, 1124), and Havana, Cuba (according to Meisner).

Var. INCANUM (Meisn.)

P. spectabile, Mart. var. *incanum*, Meisn., in Mart. Fl. Bras. v. 13 (1855).

Northern Brazil: Para (Spruce, 640).

28. POLYGONUM AMPHIBIUM, L. Sp. Pl. 361 (1753).

P. coccineum, Muhl. Cat. 40 (1813).

Ontario: Wingham (Morton); Quebec: Tadousac (Northrop); New Hampshire: Squam Lake (Schrenk); Mass.: Ipswich (Oakes); New York: Onondaga Lake (Underwood); Rockland Lake (Morong); Eagle Lake (Miss E. G. Knight); New Jersey: Morris Pond (Britton); Kentucky (Short); Rocky Mountains: Pass Creek to Bridges Pass (Englemann); Nevada: Ruby Valley (Watson); California: San Jacinto Mountains (Parish).

29. POLYGONUM EMERSUM (Michx.) Britton, Trans. N.Y. Acad. Sci. viii. 73 (1889).

P. amphibium, L. var. *emersum*, Michx. Fl. Bor. Am. 1. 240 (1803).

P. amphibium, L. var. *Muhlenbergii*, Meisn. in D.C. Prodr. xiv. 116 (1856).

P. Muhlenbergii, S. Wats. Proc. Amer. Acad. xiv. 295 (1879).

New York: Yates County (Gray); Staten Island: Garretsons (Britton); New Jersey: Morris Co., Budd's Lake (Porter); Pennsylvania: Lehigh County (Moser); Luzerne County, Long Pond (Small and Heller); Dauphin County along Susquehanna river (Small); Virginia: Giles County (Britton); Michigan: Fort Gratiot (Pitcher); Minnesota: Fort Snelling (Mearns); Nebraska: Scott's Bluff County (Rydberg); Louisiana: Alexandria (Hale); Texas: Tom Greene County (Tweedy); New Mexico (Wright, 1779); Arizona: Mogollon Mountains (Mearns); Colorado: Un-

compahgre Mountain (Flint); California: Sacramento Valley (U. S. S. Pac. Ex. Exp. 124), De Fuca (Scouler); Mexico: Near City of Mexico (Gregg, 126).

30. POLYGONUM HARTWRIGHTII, A. Gray, Proc. Am. Acad. viii. 294 (1870).

New York: Yates County (Hart Wright), Erie County (Britton); New York County (Bicknell); New Jersey: Sussex County (Porter and Britton); Michigan: Keweenaw County (Farwell, 351), Fort Gratiot (Pitcher); Nebraska: Cherry County (Bates); Nevada: Lake Washoe (Torrey, 427); Oregon: Nasqually (U. S. S. Pac. Ex. Exp. 124).

SECTION III.—AMBLYGONON.

31. POLYGONUM ORIENTALE, L. Sp. Pl. 362 (1753).

Introduced into waste grounds from India in many localities throughout the United States.

SECTION IV.—ACONOGONON.

32. POLYGONUM ALPINUM, All. Fl. Pedem. ii. 206, t. 68 f. i. (1785).

P. polymorphum, Ledeb. var *alpinum*, Ledeb. Fl. Ross. iii. 524 (1849).

Nevada: East Humboldt Mountains, 8,000 ft. (Watson, 1071).

Var. FOLIOSUM (Keller).

P. polymorphum, Ledeb. var. *foliosum*, Keller, Bull. Soc. Bot. Belg. xxx. 49 (1891).

Washington: Mount Adams (Howell); Mount Paddo (Adams) 6,000-7,000 ft. (Suksdorf).

Var. LAPATHIFOLIUM, C. and S. Linnæa, iii. 38 (1828).

P. polymorphum, Ledeb. var. *lapathifolium*, Ledeb. Fl Ross. iii. 525 (1849).

Alaska: Kuskokoin Valley (Weinmann), St. Michaels (Muir, 180), Cape Blossom (McLenigan), Kotzebue Sound (Beechey), Youkon River (Dall).

33. POLYGONUM PHYTOLACCÆFOLIUM, Meisn. n. sp.

Plant erect, sparingly branched, smooth. Leaves ovate to ovate-lanceolate, obtuse or slightly cordate at base, acute at the

apex, petioled, two to six inches long, ciliate-margined; sheaths semicylindrical, slightly pubescent, long; inflorescence paniculately racemose; flowers in rather loose, lax spikes which are about one inch long; calyx five-parted; stamens eight; style three-parted, very short; achene triquetrous, oblong, chestnut-brown, smooth.

California: (Cuming 229, type; Bridges 290), Donner Pass (Torrey 425); Coast of Mantchuria (Wilford).

The species here proposed has been confounded with *P. alpinum*, to which it is related but is plainly distinct. In 1867 it was sent to Meisner by Lenormand. Meisner saw directly that it was distinct from related species and left the following record on the label "*Polygonum phytolaceæfolium* nob. (25./6/67)" but so far as I can find he never published it, as was the case with a number of his other manuscript names.

34. POLYGONUM DAVISIÆ, Brewer, in A. Gray, Proc. Am. Acad. viii. 399 (1872).

California; Alameda Country (Miss Davis), Hermit Valley (Brewer, 2105), Placer County, on Truckee River (Sonne); Washington: Yakima Region, 6,000 ft. (Tweedy), Mt. Hood, 6,000-8,000 ft. (Howell).

The type of this peculiar and interesting *Polygonum* is glabrous, but densely tomentose specimens have been collected on some of the higher mountains along the Pacific coast. If sufficient material can be secured which will exhibit enough and constant characters there may be reason for describing these as a variety of the above species.

SECTION V.—AVICULARIA.

1. *Plants prostrate.*

35. POLYGONUM AVICULARE, L. Sp. Pl. 362 (1753).

Thoughout North America and at various localities in Mexico and South America.

36. POLYGONUM LITTORALE, Link, in Schrad. Journ. i. 54 (1799).

P. salsuginosum, Wallr. Linnæa, xiv. 568 (1840).

P. aviculare, l., var. *littorale*, Mert. & Koch, in D. Fl. iii. 59 1831).

P. crassinerve, Cesati, Stirp. Ital. fas. ii. (1840).

Canada: shore of Thunder Bay (Britton); Pennsylvania: Lycoming Co. (Small & Heller); Illinois: Sandy Plains (Short); Missouri: St. Louis Co. (Engelmann).

Var. BUXIFOLIUM, (Nutt.), Meisn. in D.C. Prodr. xiv. 98 (1856).

P. aviculare, L., var. *buxifolium*, Ledeb. Fl. Ross. iii. 532 (1847-49).

P. buxifolium, Nutt. in Bongard, Veg. Ins. Sitcha, 161 (1831).

P. aviculare, L., var. *latifolium*, Michx. Fl. Bor. Am. i. 237 (1803), fide Bongard.

Island of Sitcha.

37. POLYGONUM BELLARDI, All. Fl. Pedem. ii. 205, t. 90, f. 2 (1785).

Introduced into the agricultural grounds at Washington, D. C. (Vasey).

38. POLYGONUM MARITIMUM, L. Sp. Pl. 361 (1753).

P. glaucum, Nutt. Gen. i. 254 (1818).

Along the sea coast of Eastern North America. Maine: Mt. Desert (Miss Knight); Massachusetts: Nantucket (Mrs. Hubert), Martha's Vineyard (C. C. Curtiss), Bristol Co. (T. A. Greene); New York: Long Island (Torrey), Hog Island (E. H. Day); New Jersey: (A. Gray), Anglesea and Atlantic City (Brinton); Maryland; Worcester Co. (Rusby); Southern Florida: (Chapman).

39. POLYGONUM RAYI, Babingt. Man. Brit. Bot. 2nd ed. 275.

Naturalized on the Atlantic coast. New York: on Harlem River (Bicknell); Virginia: Portsmouth (Rugel); Norfolk (Britton).

This species of *Polygonum* has long been in the country, naturalized at the above cited localities. It was first collected at Portsmouth, Va., by Rugel. This specimen was deposited in the Herbarium of the British Museum. Later it was transferred to the Herbarium of the Geological and Natural History Survey of Canada, whence it found its way to the Columbia College Herbarium.

40. POLYGONUM LACERUM, H.B.K. Nov. Gen. ii. 179 (1817).

Mountains of Peru (according to Humboldt); Bolivia: La Paz, 10,000 ft. (Bang, 130), Cochabamba, 7,000 ft. (Bang, 1057); Western Texas: Maronllas Creek (Havard, 112).

According to a note in DeCandolle's Prodromus, Meisner seems to doubt the validity of this species, saying that fragments of Humboldt's specimens in Kunth's Herbarium are hardly sufficient to distinguish it from related plants. A very short and indefinite description is given, but the specimens of Mr. Bang agree reasonably well with it and are from the same region in which *P. lacerum* is said to occur.

As I have not seen Humboldt's specimen, I prefer to refer Mr. Bang's to *P. lacerum* rather than to describe them as new. In Dr. Rusby's distribution of Mr. Bang's collections this plant was referred to *P. striatum* which proves to be incorrect. Havard's 112 from Western Texas belongs here, and interesting as this may be, it is not surprising, for, as the flora of the Andes of South America is gradually brought to light, the relation between it and that of the southwestern United States is more clearly seen

41. POLYGONUM CHILENSE, C. Koch, Linnæa, xxii. 206 (1849).

P. maritimum, C. and S. Linnæa, iii. 51 (1828), not L.

P. Sanguinaria, Remy, in Gay Fl. de Chili, v. 270 (1876).

Southern South America: Coast of Chili and Strait of Magellan: Sandy Point (Lechler, 1128).

42. POLYGONUM BOWENCAMPI, Phil. Linnæa, xxxiii. 224 (1864).

Chili: Santiago, in the Andes (Bowencamp, according to Philippi).

43. POLYGONUM STRIATUM, C. Koch, Linnæa, xxii. 206 (1849).

P. maritimum, Remy, in Gay Fl. de Chili, v. 269 (1845), not L.

South America.—Chili: Corral, Province of Valdivia (Lechler, 712); Ancud (Philippi).

44. POLYGONUM SHASTENSE, Brewer, in A. Gray, Proc. Am. Acad. viii. 400 (1872).

In the Sierra Nevada Mountains, California: Mt. Shasta, 8,000-9,000 feet (Brewer, 1382); Lassens Peak, 9,000-10,000 feet Brewer, 2179); near Donner Pass (Torrey, 424).)

45. POLYGONUM PARONYCHIA, C. and S. Linnæa, iii. 51 (1828).

Puget Sound and San Francisco (U. S. S. Pac. Expl. Ex., 1454); California (Eschscholtz); Monterey (Rich); San Francisco (Torrey, 429); Oregon (Pringle); British Columbia: Vancouver Island (Macoun).

46. POLYGONUM FLAGELLIFORME, Weddell, in Ann. Sc. Nat. 3d ser. xiii. 254 (1849).

Southern Brazil: Province of Rio Grande.

2. *Plants erect.*

47. POLYGONUM ERECTUM, L. Sp. Pl. 363 (1753).

Massachusetts: Cambridge (Morong); South Boston (Faxon); New York: Staten Island (Britton); Pennsylvania: Lancaster Co. (Porter), Lycoming Co. (Small and Heller); Virginia: Norfolk (Morong); Smyth and Pulaski Cos. (Small); Tennessee: Cumberland Gap (Small); Southern States (Chapman); Illinois: Oquawka (Patterson); Nevada: Austin, 6,500 feet (Watson, 1056).

48. POLYGONUM RAMOSISSIMUM, Michx. Fl. Bor. Am. i. 237 (1803).

Massachusetts: Milton (Deane); New York: Staten Island (Britton); along Harlem River (Bicknell); New Jersey: Atlantic City (Brinton); Nebraska: Valentine (Bates); Long Pine (Conkling); Minnesota: Fort Snelling (Mearns, 583); Indian Territory (Palmer, 287); New Mexico (Wright, 1775); Utah: Salt Lake City, 4,300 feet (Jones, 1090); Wyoming: Yellowstone Park (C. H. Hall); Nevada: Truckee Valley (Bailey, 1057); Saskatchawan (Bourgeau).

49. POLYGONUM BERTEROI, Phil. Linnæa, xxix. 38 (1857).

Chili: Near Rancagua (Bertero, according to Philippi).

50. POLYGONUM BRASILIENSE, C. Koch, Linnæa, xxii. 206 (1849). *P. aviculare*, L., var. *Montevidense*, C. and S. Linnæa, iii. 50 (1828).

Southern South America.

Not having seen this species, I prefer for the present to retain *Brasiliense* as the specific name, which, however, should be changed, if *P. Brasiliense* and *P. aviculare*, var. *Montevidense* are identical.

51. POLYGONUM CAMPORUM, Meisn. in Mart. Fl. Bras. v. 21 (1855).

P. camporum, Meisn., var. *boreale*, Meisn., in Mart. Fl. Bras. v. 22 (1855).

Texas (Drummond, 254); on the Sea Willow (Bigelow, Mex. Bound. Surv.); Maverlick Co., mouth of the Las Moras (Schott); Bejar (Berlandier, 1770); Western Texas (Wright, 614); Nebraska: Lancaster Co. (Webber).

Var. AUSTRALE, Meisn. in Mart. Fl. Bras. v. 22 (1855).

In Buenos Aires (according to Meisner).

52. POLYGONUM STYPTICUM, C. and S. Linnæa, iii. 53 (1828).

Southern Brazil: On the Rio Negro (Sellow); Northern Patagonia: Rio Negro (Wilkes S. Pacific Expl. Ex.).

53. POLYGONUM TENUE, Michx. Fl. Bor. Am. i. 238 (1803).

P. linifolium, Muhl. Cat. 40 (1813).

New Hampshire: Red Hill (Schrenk); Connecticut: New Haven Co. (Eaton); Pennsylvania: Lehigh Co. (Moser); Delaware Co. (Brinton); Montour Co. (Heller); Lancaster and Lebanon Cos. (Small); Maryland: Worcester Co. (Rusby); North Carolina: Smith Mountain (Miss Reynolds); Michigan: St. Clair Co. (Pitcher); Iowa: Winneshiek Co. (Holway); Illinois: Henderson Co. (Patterson); Kentucky (Short); Arkansas (Leavenworth); Red River (Pitcher).

54. POLYGONUM DOUGLASII, Greene, in Bull. Cal Acad. i. 125 (1885).

P. coarctatum, Dougl., var. *majus*, Meisn. in D.C., Prodr. xiv. 101 (1856) in part.

Canada: Lake Muskoka (Britton); Vermont: Snake Mountain (Brainerd); Nebraska: Banner Co. (Rydberg, 346); Indian Territory: On the False Washita (Palmer, 288); New Mexico: Copper Mines (Bigelow); Colorado: Eagle River (Coulter); Utah: Wahsatch Mountains, 7,000 feet (Watson, 1059); Nevada: Austin, 6,500 feet (Watson, 1059); Washoe Valley (Stretch, 182); California: Yosemite Valley and Mountains (Torrey, 423); Oregon (Hall, 450); on the Columbia River (Douglas); Washington: Falcon Valley (Suksdorf, 211); Vancouver Island: Departure Bay (Macoun).

For some years there has been dissatisfaction among certain botanists as to the disposal of a *Polygonum*, found in the northeastern United States and Canada, which resembles *P. tenue* to

some extent. The whole trouble proves to be caused by trying to make two separate and distinct species one. The plant turns out to be *P. Douglassii*, which ranges across the northern part of the continent from the Pacific to the Atlantic Ocean. *P. Douglassii* can be distinguished from its relative *P. tenue* at a glance, and is beautifully distinct, as Prof. Greene has pointed out, by its one-ribbed leaf in place of the three-ribbed leaf of *P. tenue*, and the much longer, narrower and pediceled, drooping fruit, instead of the short, thick, sessile, erect fruit of that plant.

Var. LATIFOLIUM (Engelm.) Greene, Bull. Cal. Acad. i. 125 (1885).

P. tenue, Michx. var. *latifolium*, Engelm., in A. Gray, Proc. Phila. Acad. 1863, 75.

Colorado: Gray's Peak (Patterson, 130); Arizona: Mokiah Pass (Palmer, 420); California: Tulare Co. (Palmer, 177); Oregon: Siskiyou Mountains (Howell).

55. POLYGONUM MICROSPERMUM (Engelm).

P. tenue, Michx. var. *microspermum*, Engelm., in A. Gray, Proc. Phila. Acad. 1863, 75.

P. Engelmanni, Greene, Bull. Cal. Acad. i. 126 (1885).

Colorado: Jefferson Co., Bergen Park (Greene).

56. POLYGONUM AUSTINÆ, Greene, Bull. Cal. Acad. i. 212 (1885).

California: Modoc Co. (Mrs. Austin); Wyoming, Yellowstone Park (Tweedy).

57. POLYGONUM SPERGULARIÆFORME, Meisn.

P. coarctatum, Dougl. ex. Meisn. in D.C. Prodr. xiv. 101 (1856), not Meisn.

Western North America: Straight of De Fuca (Scouler), California (Fremont), Borax Lake (Torrey, 426); Oregon and Northern California (U. S. S. Pac. Exploring Expedition, 1628).

The specific name *coarctatum* was first published in Meisner's Mon. Gen. Polyg., in 1826, being there applied to a Siberian plant. The name, therefore, cannot be used for the American species. Meisner left the manuscript name *spergulariæforme* on one of his labels, which is here taken up.

58. POLYGONUM MINIMUM, S. Watson, Bot. King, Exp. 315 (1871).

P. Torreyi, S. Watson, Am. Naturalist, vii. 664 (1873).

Utah, near River Canon, 10,500 feet (Watson, 1058), Wahsatch Mountains, 8,000 feet (Jones, (1221); Idaho (Kootani Co. (Heller), Washington, Yakina region (Tweedy).

59. POLYGONUM KELLOGGII, Greene, Fl. Fran. 134 (1891).

California: Mountains near Donner Lake (according to Greene).

60. POLYGONUM INTERMEDIUM, Nutt. in S. Watson, Proc. Am. Acad. xvii. 378 (1882).

Oregon; Bridal Veil, Multnomah Co. (Suksdorf); Bluffs of the Columbia River (Pringle); Cape Horne (Howell); Vancouver Island (Macoun).

61. POLYGONUM IMBRICATUM, Nutt. in S. Watson, Am. Nat. vii. 665 (1873).

California: Donner Lake (Torrey, 426 a), Green Horn mountains, Kern Co. (Palmer, 64); Washington: Falcon Valley and Skamania Co. (Suksdorf), Yellowstone Park, Mt. Evarts, 8,000 feet (Tweedy); Utah: Alta Wahsatch Mountains, 10,000 feet (Jones, 1105), Parley's Park, 6,500 feet (Watson, 1062 and 1063); Nevada: East Humboldt mountains, 9,500 feet (Watson, 1062 and 1063).

62. POLYGONUM POLYGALOIDES, Meisn. in D.C., Prodr. xiv. 101 (1856).

Oregon and Washington (U. S. S. Pac. Ex. Expedition, 533 bis), also on the Koorkoorhea river: Spokane Co. (Susksdorf); Montana; Beaver Head Co. (Tweedy, 104).

63. POLYGONUM BOLANDERI, Brewer, in A. Gray, Proc. Am. Acad. viii. 400 (1872).

California: Napa Valley (Bolander, 18; Brewer, 854, Pringle), and in the Valley of the Sacramento.

SECTION VI. DURAVIA.

64. POLYGONUM CALIFORNICUM, Meisn. in D.C. Prodr. xiv. 100 (1856).

California (Hartweg, 1944), Sacramento river (Nevius), Donner Lake, 7,500 feet (Greene 439), Milton (Parry 247), Napa (Bolander, 2643); Oregon: Grant's Pass (Howell).

65. POLYGONUM GREENEI, S. Watson, Proc. Am. Acad. xvi. 295 (1879).

California: Calistoga (Greene), Shasta Co., Redding (Greene).

66. POLYGONUM BIDWELLIÆ, S. Watson, Proc. Am. Acad. xiv. 294 (1879).

California: near Chico (Mrs. Bidwell).

67. POLYGONUM PARRYI, Greene, Bull. Torr. Club, viii. 99 (1881).

Oregon: Waldo (Howell), Grant's Pass (Howell, 254); California: Yosemite Valley (Parry); Washington: Falcon Valley (Suksdorf, 609).

SECTION VII. TINIARIA.

68. POLYGONUM CONVOLVULUS, L. Sp. Pl. 364 (1753).

Vermont: Charlotte (Pringle); Maine: Mt. Desert Island (White); New York: Alder Lake, (Rusby); Pennsylvania: Bucks County (Ruth); Virginia: Natural Bridge (Britton), White Rock mountain and Cumberland Gap (Small); Florida (Chapman); West Virginia: Banks of the Ohio (Millspaugh); Nebraska: Fort Niobrara (Wilcox), Kimball County (Rydberg, 350); Utah: Utah Valley, 5,000 feet (Watson, 1070).

69. POLYGONUM DUMETORUM, L. Sp. Pl. Ed. 2, 522 (1762).

There are specimens of this species identical with the European plant, in the Harvard and Columbia College Herbaria, collected by Englemann on the prairies of Illinois and about St. Louis, Missouri. Whether the plant is introduced from Europe or native, it is impossible to tell at the present time.

70. POLYGONUM SCANDENS, L. Sp. Pl. 364 (1753).

P. dumetorum, L. var. *scandens*, A. Gray, Man. Ed. 5, 41 (1867).

Massachusetts: Ipswich (Morong); New York: Erwin (Hart Wright), New York City (Torrey), Staten Island (Britton); Pennsylvania: Bethlehem (Moser), Harrisburg (Small); Florida (Chapman); West Virginia: Monongalia County (Millspaugh); Louisiana: New Orleans (Ingalls); Indian Territory, on the False Washita (Palmer, 289); Texas, on the Liana (Lindheimer, 685); Nebraska: Lincoln (Webber), Deuel County (Rydberg, 351).

Although this species closely resembles *P. dumetorum* in aspect, it has characters which are constant and sufficient to

hold it separate from that plant. The achene is much larger, the wings of the calyx much broader and more emarginate at the apex; the pedicels are also longer than in *P. dumetorum.*

71. POLYGONUM CRISTATUM, Engelm and Gray, Pl. Lindh. Boston Journ. Nat. Hist. v. 259 (1847).

Texas (Lindheimer, 296); South Carolina: Santee Canal (Ravenel).

The range of this species of which so little is known, has been extended far to the east by specimens of Ravenel, collected on the Santee Canal, S. C., which have been preserved for many years in the Gray Herbarium, under the name of *P. scandens.* There may be much more of it scattered through the South, and probably it has been overlooked on account of its close relationship to that species.

72. POLYGONUM CILINODE, Michx. Fl. Bor. Am. i. 241 (1803).

Canada, North Bay (Britton); Wisconsin: Milton (Sandberg); Massachusetts: Williamstown (Torrey); New York: Alder Lake (Rusby), Onteora Mountains (Miss Vail); Pennsylvania: Pocono Mountains (Wolle), Perry and York Counties (Small).

73. POLYGONUM CUSPIDATUM, Sieb. and Zucc. Fl. Japon. Fam. Nat. ii. 84 (1846).

Naturalized near Philadelphia, Pennsylvania (C. E. Smith); also on the banks of the Mohawk River below the Aqueduct, Schnectady N. Y. (Wibbe).

SECTION VIII.—ECHINOCAULON.

74. POLYGONUM SAGITTATUM, L. Sp. Pl. 363 (1753)

Massachusetts: Ipswich (Morong); New York: West Point Torrey); Minnesota: Hennepin Co. (Sandberg); Ohio: Canton (Riehl); Nebraska: Long Pine (Swezey, 113); Pennsylvania: Harrisburg (Small), Easton (Porter); Virginia: Iron Mountains (Small); West Virginia: Monongalia Co. (Millspaugh, 793); Florida: (Chapman).

Var. PUBESCENS, Keller, Bull. Soc. Bot. Belg. xxx. 45 (1891).

New York, wet grounds near Troy (A. Puissant according to Keller.)

75. POLYGONUM MEISNERIANUM, C. &. S., Linnæa, iii. 40 (1828).

P. Chamissoanum, Weddell, in Ann. Sc. Nat. 3d ser. xiii. 254 (1849).

Brazil: Caldas (Regnell, ii. 233).

Var. BEYRICHIANUM (C & S.) Meisn., in Mart. Fl. Bras. v. 19, t. 1, f. 2 (1855).

P. Beyrichianum, C. & S. Linnæa, iii. 42 (1828).

P. multangulare, Hook. & Arn. in Comp. Bot. Mag. ii. 62 (1836).

P. Türckheimii, Vatke., in Herb. of J. Donnell Smith.

Southern Brazil: Soracoba (Warming, 142), Caldas (Regnell, iii. 1027); Guatemala: Coban (Türckheim, 243); Cuba: (Wright, 2254); United States: Louisiana, Madisonville (Riddell), Bookfalaya River (Langlois).

76. POLYGONUM RUBRICAULE, Cham. Linnæa, viii. 130 (1833).

Brazil: (Sellow) according to Chamisso.

77. POLYGONUM STELLIGERUM, Cham. Linnæa, viii. 131 (1833).

Brazil: (Sellow) according to Chamisso.

78. POLYGONUM ARIFOLIUM, L. Sp. Pl. 364 (1753).

Massachusetts: Hingham (Morong); Vermont: Bristol (Pringle); New York: (Torrey); New Jersey: (Eaton); Pennsylvania: Harrisburg (Small); Delaware: Centreville (Commons); Southern States (Chapman).

SECTION IX.—TOVARIA.

79. POLYGONUM VIRGINIANUM, L. Sp. Pl. 360 (1753).

P. muticum, Moench. Suppl. 266 (1802).

Persicaria Virginiana, Gærtn. Fruct. et Sem. ii. 180, t. 119 (1802).

New York: Bloomingdale (Torrey); Pennsylvania: Easton (Porter); South Carolina: Bluffton (Mellichamp); Georgia: (Chapman); Kentucky: (Short); Missouri: St. Louis (Fritchey); Nebraska: Lincoln (Webber); Indian Territory: on the False Washita (Palmer); Red River (Pitcher).

Polygonum fimbriatum, Elliott is excluded from this list as its distinctive characters seem to be sufficient for holding it in the genus founded for it by Dr. Gray, namely *Thysanella*.

An Enumeration of the Plants Collected by Dr. H. H. Rusby in South America, 1885-1886.—XXII.

(Continued from page 266.)

HIERACIUM MAPIRENSE, spec. nov. Caule gracile, erecto, parce ramoso, pubescens, 30-40 cm. alto, superne nudo. Foliis oblongis vel lanceolatis, obtusis, denticulatis vel summis linearibus, integris, supra glabris, subtus parce pubescentibus, radicalibus petiolatis, 6-10 cm. longis, 1 cm. latis; capitulis paucis, gracile, pedunculatis, 3-4 cm. latis; involucro campanulato, bracteis lineari-lanceolatis, acutis, pubescentibus; radiis apice dentatis, disco duplo superantibus; pappus sordidus, glaber, 8 mm. longis.

Mapiri, 10,000 ft. (1694).

HIERACIUM ADENOCEPHALUM (Sch. Bip.). (*Pilosella adenocephala*, Sch. Bip. Bull. Soc. Bot. Fr. xii. 82, name only.) Near La Paz, 10,000 ft. (1653). The same as Mandon's 272.

Hypochæris elata (Wedd.), Griseb. Symb. Fl. Argent. 218. Near La Paz, 10,000 ft. (1723). The same as Mandon's 285.

HYPOCHÆRIS TARAXICOIDES (Walp.). (*Achyrophorus taraxicoides*, Walp. Rep. vi. 336.) Unduavi, 10,000 ft. (2134). The same as Mandon's 275.=*A. stenocephalus*, A. Gray.

HYPOCHÆRIS ACAULIS (Remy). (*Achyrophorus acaulis*, Remy in Gay, Fl. Chil. iii. 448.) Near La Paz, 12,000 ft. (1716).

HYPOCHÆRIS CHILENSIS (Sch. Bip.). (*Achyrophorus Chilensis*, Sch. Bip. Bull. Soc. Bot. Fr. xii. 82, name only.) Near La Paz, 10,000 ft. (1724). The same as Mandon's 284.

Sonchus asper (L.), Vill. Fl. Delph. iii. 158. Near La Paz, 10,000 ft. (1655).

CAMPANULACEÆ.

Centropogon Surinamense (L.) Presl. Prodr. Mon. Lobel. 48. Mapiri, 5,000 ft. (635); Unduavi, 8,000 ft. (637); Yungas, 4,000 ft. (1093).

CENTROPOGON YUNGASENSE, sp. nov. Herbaceum, ramis teretibus, glabris, divaricatis; foliis oblongis, obtusis, brevissime petiolatis, crenulatis, utrinque glabris, 6-7 cm. longis, 3-4 cm. latis; floribus terminalibus breviter racemosis 3 cm. longis; pedicelli graciles, canescentes, ebracteati, 1-2 cm. longi; calycis

tubus brevis, puberulus, basi truncatus, lobis lineari-oblongis, basi patentibus; corollæ extus tomentulosæ; stigma inclusum.

Yungas, 4,000 ft. (642).

Siphocampylus augustiflorus, Schlecht. Unduavi, 12,000 ft. (653); Yungas, 4,000 ft. (646); locality uncertain (2550). The same as Lechler's 2,649, Herb. Kew. Mandon's No. 499 may be the same.

Siphocampylus Bolivianus, Zahlbr. Ann. k. k. Hof-Museum, vi. 443. Sorata, 8,000 ft. (645).

Apparently the same as Mandon's 496, the type of Dr. Zahlbrucker's species. Our specimens are stouter and with broader and thinner leaves than Mandon's. The plant was also collected by Pearce, somewhere in Bolivia, and his specimens are in the Kew Herbarium, under No. 712.

Siphocampylus Orbignyanus, A. DC. Prodr. vii. 405. Unduavi, 12,000 ft. (652).

Siphocampylus volubilis (H. B. K.) Don, Gen. Syst. Gard. iii. 703. Sorata, 8,000 ft. (650); Guanai, 2,000 ft. (643).

SIPHOCAMPYLUS MEMBRANACEUS, n. sp. Caule gracile, volubile, parce pubescente, 1-2 m. alto. Foliis oblongis, viridis, tenuibus, acuminatis, basi attenuatis, margine glanduloso-denticulatis, breviter petiolatis, supra glabris, subter minutissime puberulis, 10-15 cm. longis, 4-5 cm. latis; floribus paucis; pedicellis gracilibus, puberulis, 4-5 cm. longis; calycis tubus campanulatus 2 mm. longus, lobis subulato-linearibus, 1 cm. longis; corolla glabra, angusta, rubra, 4-5 cm. longa, lobis lanceolatis, acuminatis.

Yungas, 6,000 ft. (651).

SIPHOCAMPYLUS RUSBYANUS, n. sp. Caule ramisque glabris, teretibus. Foliis ovatis coriaceis, apice acutis, basi rotundatis vel subcordatis margine denticulatis, supra glabris, rugosis, subter valde reticulatis canescentibus, 6-10 cm. longis, 3-5 cm. latis; petiolis 5-15 mm. longis; pedicellis puberulis, 4 5 cm. longis; calycis tubo obconico 1 cm. alto, lobis lanceolato-linearibus, acutiusculis, 1 cm. longis, 1 mm. latis; corolla puberula, 2 cm. longa, 1 cm. diametro, valde lobata; antheræ omnes glabræ.

Mapiri, 5,000 ft. (644). Collected also by Pearce at Callcan, Nov. 1864.

SIPHOCAMPYLUS UNDUAVENSIS, n. sp. Dense stellato-pubescens. Foliis oblongo-lanceolatis, apice acuminatis, basid augustis, breve petiolatis, minute glanduloso-denticulatis 10-15 cm. longis, 2-4 cm. longis, subter reticulatis; pedunculis 3-5 cm. longis; calycis tubo subgloboso vel ovoideo, 1 cm. lato, lobis lanceolatis acuminatis, 5-7 mm. longis; corolla superne ampliata, puberula, 2-3 cm. longa, 1-1.5 cm. lata; antheræ apice hirtellæ; fructus subglobosus, 1-5 cm. diametro, dense stellato-pubescens.

Unduavi, 8,000 ft. (649).

SIPHOCAMPYLUS INCANUS, n. sp. Caule ramisque dense floccoso-incanis. Foliis late oblongis vel oblanceolatis apice abrupte acuminatis, basi attenuatis vel cuneatis, margine glanduloso-denticulatis, supra floccosis, subtus dense albo-incanis, 18-30 cm. longis, 7-10 cm. latis; petiolis 2-3 cm. longis; pedunculis crassis, floccosis, erectis, 10-15 cm. longis; calycis tubo oblongo-obovoideo, 1-2 cm. longo, incano, lobis lineari-lanceolatis, acuminatis, incanis, 3-4 cm. longis, 2-4 mm. latis; corolla dense floccosa, 4-5 cm. longa, 2 cm. lata, lobis oblique lanceolatis, acuminatis; antheræ dense hirsutæ.

Yungas, 6,000 ft. (648). Near *S. lanatus*, Benth.

SIPHOCAMPYLUS GLORIOSUS, n. sp. Ramis, petiolis, pedunculisque dense stellato-tomentosis. Foliis oblongis, apice acutis vel acuminatis, basi rotundis, margine glanduloso denticulatis, supra scabris rugulosis, subter reticulatis, stellato-tomentosis, 10-15 cm. longis, 4-6 cm. latis; petiolis crassis, 5-10 mm. longis; pedunculis crassis, folia æquantibus; calycis tubo late ovoideo, costato, 1.5 cm. longo, dense stellato, basi truncato, lobis foliaceis, late lanceolatis, reflexis, acuminatis, glanduloso-dentatis; corolla 4-5 cm. longa, superne ampliata, stellato-pubescens, lobis lanceolatis; antheræ dense hirsutæ.

Unduavi, 10,000 ft. (647). Near *S. giganteus.*

Siphocampylus giganteus (Cav.), Don., var. LATIFOLIUS, n. var. Foliis oblongis, acutis, 5.6 cm. latis. Unduavi, 8000 ft. (638).

SIPHOCAMPYLUS ANDINUS, n. sp. Glabrescens vel superne minutissime puberula, ramis gracilibus. Foliis lanceolatis utrinque viridis, acuminatis vel acutis, basid rotundatis, margine remote denticulatis, 5-8 cm. longis, 1-2 cm. latis; petiolis gracilibus, 5-1.2 cm. longis; pedunculis folium æquantibus; calycis tubo depresso-hemispherico, 2-3 mm. alto, 1 cm. lato, lobis foliaceis lanceolatis, acutis, erectis, integris,

1 cm. longis; corolla glabra, angusta, 4-5 cm. longa; antheræ apice pilosæ.

Unduavi, 8,000 ft. (641).

Resembles Mandon's No. 498; but leaves and calyx-teeth shorter, flowers larger and venation different.

SIPHOCAMPYLUS GRACILIS, n. sp. Molliter pubescens, caulis erectis, gracilibus, ½-1 m. altis. Foliis ovatis, acuminatis, basis truncatis vel subcordatis, margine irregulariter dentatis, utrinque pubescentibus, breviter petiolatis, 4-5 cm. longis, 2-4 cm. latis; flores in axillis summis; pedicellis gracilibus glabris 4-5 cm. longis; calycis tubo hemispherico, puberulo, 2-3 mm. alto, 4-5 mm. lato, lobis lanceolatis, acuminatis, integris 2 mm. longis; corolla glabra, angusta, 4 cm. longa, 5 mm. diametro, lobis angustis; antheræ glabræ.

Unduavi, 12,000 ft. (640.) Collected also by Bridges in Bolivia.

Var. GLABRIS, n. var. Tota planta glabra; foliis glandulosodenticulatis.

Unduavi, 12,000 ft. (639). This was distributed as *Scorymbiferus*, Pohl, a Brazilian species which it resembles

Siphocampylus tupæformis, Zahlbr. Ann. k. k. Hof. Mus. vi. 440. Unduavi, 8000 ft. (636). Distributed as *Tupa Feuillei*, Don.

Tupa salicifolia, Don, Gard. Dict. iii. 700. Valparaiso, Chili (634).

Lobelia micrantha, H. B. K. Nov. Gen. iii. 316. Mapiri, 5,000 ft. (1967).

Lobelia nana, H. B. K. Nov. Gen. iii. 317, t. 272. Sorata, 10,000 ft. (1075). The same as Mandon's 1463.

Rhizocephalum pumilum, Wedd. Chlor. And. ii. 13. Unduavi, 8,000 ft. (2,445). The same as Mandon's 492.

Wahlenbergia linarioides (Lam.) A. D. C. Mon. Camp. 158. Near Valparaiso, Chili (632); Yungas, 6,000 ft. (631); Sorata, 10,000 ft. (633). Same as Mandon's 1664.

Phænological Notes.

By L. H. Pammel.

A paper read before the Iowa Academy of Science, December, 1891.

One of the points too often neglected in working up our flora is the relation that climate bears to plants. It is a question, too, that is of interest to horticulturists and agriculturists. Especially so when we take into consideration our cultivated plants. Few authors in working out our floras have touched upon this matter. Mr. Frederick Brendel[1] is one of the few who has given dates and time of ripening of seed of cultivated plants, as well as other phænological notes. Among the authors of our local floras who have given such data, I may mention W. R. Dudley,[2] Lester F. Ward,[2a] Britton,[3] Trelease,[4] Henry,[5] Halsted[6].

European investigators have been much more active in this direction. Extensive monographs and papers have been published by Fritsch,[7] Quetelet,[8] Lachmann,[9] Ihne,[10] Hoffmann,[11] etc.

This paper has been divided up into—

I. A succession of flowers for the years 1886 and 1891. The dates of the first appearance of flowers for 1886 are based on the observations of Halsted. In 1891 a large number of data were made by myself and P. H. Rolfs, but I have only selected some of them.

II. A comparison of the appearance of the flowers, leaves, etc., for the years 1886 and 1891. The observations of 1886 are based on those made by Richman under Halsted's[12] direction. Those of the spring of 1891 were made under my direction by Eugene Brown, a special student in botany.

III. Some notes on falling of leaves, especially as influenced by frost. Also a few notes on the effects that frost had on some plants—here again, not to make the paper too lengthy—a large number of observations are omitted. The observations were made on plants in a small garden, so that the conditions were nearly the same. These notes would be more valuable if exact temperatures had been recorded, as Fritsch has done. We hope to continue our observations next year, and keep a record of the temperature.

IV. Some notes on late flowering plants.

[1] Flora Peoriana; The Vegetation in the Climate of Middle Illinois; Illinois Agricultural Society, Vol. III.

[2] The Cayuga Flora.

[2a] Guide to the Flora of Washington and Vicinity.

[3] Bulletin Torrey Botanical Club, Vol. vi. p. 211–213; 235–237.

[4] First and Second Annual Report Wisconsin Agricultural Experiment Station, 1883, p. 56; 1884, p. 59.

[5] Annual Report of the Board of Regents of the University of Wisconsin for 1881.

[6] Bulletin Iowa Agricultural College, Department of Botany, 1886, p. 44.

[7] Thermische Constanten für die Blüthe und Fruchtreife von 889 Pflanzenarten, aus d. K. K. Akad. d. Wissenschaften, Vienna, 1861; Sitzung 28 November, pp. 120, 1 plate, Vienna, 1863.

[8] Sur le Climat de la Belgique, chap. iv.

[9] Die Entwickelung der Vegetation durch die Wärme u. s. w. Jahresb. (33 d. schlesischen Gesellsch. f. vaterländische Cultur in Breslau (1855).

[10] Beiträge zur Phänologie. Giessen, 1884, 178 pp. (Hoffmann and Ihne), Pt. I, E. Ihne; Pt. II, H. Hoffmann.

[11] Ueber den phænologischen Werth von Blattfall und Blattverfärbung, Allg. Forst u. Jagdzeitung, 1888, No. 8; April, 1889, etc.

[12] Bulletin Iowa Agricultural College, 1886, p. 44.

I.—SUCCESSION OF FLOWERS FOR 1886 AND 1891.

Name.	1886.	1891.
Acer nigrum	April 30.	.....
Acer saccharinum	March 22,	April 7.
Amelanchier Canadensis	April 20,	" 26.
Anemone nemorosa	" 20,	" 26.
Antennaria plantaginifolia	" 18,	" 26.
Capsella Bursa-pastoris	" 15,	" 24.
Claytonia Virginica	.....	" 19.
Dentaria laciniata	April 20,	" 26.
Dicentra Cucullaria	" 15,	" 20.
Draba Caroliniana	" 20,	" 23.
Erythronium albidum	" 15,	" 28.
Geranium maculatum	May 4,	May 22.
Hepatica acutiloba	April 9,	April 12.
Hydrophyllum Virginicum	May 16,	May 14.
Hypoxis erecta	April 25,	" 14.
Lithospermum canescens	May 1,	" 12.
Mertensia Virginica	April 20,	April 28.
Negundo aceroides	" 16,	" 23.
Oxalis corniculata	.....	May 23.
Oxalis violacea	April 23,	" 15,
Pastinaca sativa	May 29,	" 22.
Phlox pilosa	.....	" 22.
Podophyllum peltatum	May 7,	" 22.
Populus monilifera	April 18,	April 20.
Prunus Pennsylvanica	May 10,	" 30.
Pyrus coronaria	" 4.	May 13.
Ribes aureum	.....	April 28.
Ulmus Americana	April 13,	" 24.
Ulmus fulva	" 23,	" 24.
Viola palmata, var. cucullata	" 18,	" 29.
Viola pubescens	.....	" 25.

II.—Calendar of Trees and Shrubs, Ames, Iowa, 1886.

NAME.	MARCH.	APRIL.	MAY.	JUNE.	JULY.	SEPTEMBER.	OCTOBER.	NOVEMBER.
Hard Maple (Acer nigrum.)		20 L. B. opening.	3 L. 1½ in. long. 16 Full leaf.	4 Terminal B formed.		2 L. turning. 18 L. falling.		
Soft Maple (Acer saccharinum.)	22 In flower.	12 L. B. opening.	16 Full leaf. Fruit falling.	27 Terminal B. formed.			4 L. turning. 14 L. falling.	
Hackberry (Celtis occidentalis.)		20 B. swelling.	23 Full leaf.		12 Terminal B. formed.		8 L. falling.	
Honey Locust (Gleditschia triacanthos.)		14 B. swelling.	3 L. ⅝ in. long. 17 In flower.				1 Seeds ripe. 9 L. falling.	
Butternut (Juglans cinerea.)		29 L. B. open.	4 Full leaf.					
Cottonwood (Populus monilifera.)		12 B. swelling. 20 In flower.	16 Full leaf.	29 Terminal B. formed.			4 L. turning. 12 L. falling.	
Wild Crab (Pyrus Iowensis.)		14 B. swelling.		4 Full leaf.				
Ash Leaved Maple (Negundo aceroides.)		12 B. swelling. L. 2 in. long.	21 In full leaf.	28 Terminal B. formed.		23 Fruit ripe.	2 L. frost-bitten. 5 L. falling.	
Lilac (Syringa vulgaris.)	19 B. swelling.	12 B. opening. 26 L. 1 in. long.	3 In flower.	29 Terminal B. formed.				3 L. falling.
White Elm (Ulmus Americana.)		12 In flower. 20 L. B. swelling.	3 L. 2 in. long. 21 Full leaf.	11 Terminal B. formed.			2 L. frost-bitten. 12 L. falling.	

II.—Calendar of Trees and Shrubs, Ames, Iowa, 1891.

NAME.	APRIL.	MAY.	JUNE.	JULY.	SEPT.	OCTOBER.	NOVEMBER.	REMARKS.
Hard Maple..... (Acer nigrum.)	24 L. B. swelling.	3 L. 1⅛-2⅛ in. long. 28 L. 6-10 in. long, incl. petioles.	.....	.....	.....	18 L. becoming yellow. 27 Nearly all off.	.....	Leaves fall much earlier and rapidly than soft maple. Tints brilliant. Some variations in falling of leaves.
Soft Maple..... (Acer saccharinum.)	11 In flower. 14 B. swelling.	9 L. 1¾-2¾ in. long. 24 Fruit falling.	.....	.....	.....	17 L. green. 30 L. dry and falling.	1 L. falling rapidly.	Brilliant tints on some trees, not as pronounced as hard maple. Great variations in falling of leaves of trees growing in close proximity.
Hackberry ..... (Celtis occidentalis)	13 B. no change. 24 B. swelling.	9 L. ¾-1⅜ in. long. 16 L. 2-3 in. long.	.....	.....	.....	11 L. not frost-bitten, some green, some yellow. 24 L. off or nearly so.	.....	Leaves of some trees commence to change their color early, but they seem to hang on well.
Honey Locust..... (Gleditschia triacanthos.)	13 B. no change. 18 B. swelling. 20 B. opening.	16 New wood, 2-4 in. long. L. 2-3½ in. long.	.....	.....	.....	18 L. falling.	.....	
Coffee Tree..... (Gymnocladus Canadensis.)	13 B. no change. 14 B. swelling. 29 B. opening.	9 L. 1½-2 in. long. 16 L. 3-10 in. long.	.....	.....	.....	10 L. falling, some green. Some trees nearly all off. 24 L. all off.	.....	
Butternut..... (Juglans cinerea.)	15 B. swelling.	9 L. ¾-1½ in. long. 16 In flower. 28 L. 8-12 in. long. Catkins falling.	.....	.....	28 Nuts falling.	10 L. nearly all off.	.....	Leaves badly affected with a fungus (*Marsonia Juglandis*).

Sycamore (Platanus occidentalis.)	13 B. no change. 29 B. swelling.	9 L. 1-1⅜ in. long. 16 L. 1-2½ in. long.					
Cottonwood (Populus monilifera.)	13 B. ⅛-¾ in. long.	16 Seeds falling.					
Wild Crab (Pyrus coronaria.)	7 B. no change. 14 B. ⅛-¼ in. long.	9 L. ¾-1½ in. long. 13 L. 1-2⅞ in. long. In flower. 23 Petals falling.					
Burr Oak (Quercus macrocarpa.)	13 B. no change. 24 B. ¼-½ in. long. L. 1-1¼ in. long.	9 L. 2-2¾ in. long. In flower. 16 L. 3-5 in. long.				10 L. green. 14 L. some red, tinged with yellow. 27 L. all yellow, falling rapidly.	
Ash Leaved Maple (Negundo aceroides.)	1 B. no change. 24 B. slightly swollen. In flower. 29 Flowers falling. L. ⅜-1 in. long. Fruit ⅛-¼ in. long.	9 L. 1¾-2 in. long. Fruit ½ in. long. 28 L. 2-4 in. long. Fruit 1¼ in. long.				24 L. all off, or nearly so.	
Lilac (Syringa vulgaris.)	1 B. no change. 7 B. no change. 18 B. ¼-⅜ in. long. 29 L. ¼-1¾ in. long.	9 L. ¾-2¼ in. long. In flower. 16 In full bloom. 23 L. 2-3¾ in. long. Out of flower.				14 L. green.	1 L. yellowish green, falling.
White Elm (Ulmus Americana.)	11 B. swelling. 18 In flower.	28 L. 4 5 in. long. Fruit falling.				13 L. yellow, falling.	

III.—Frost and Behavior of Plants.

Portulaca oleracea. Early in September tips slightly affected by frost; Oct. 1st, frost nearly destroyed it; 9th, in an open field, black; 18th, started to grow again.

Amarantus blitoides. Early in September slightly affected by frost; Oct. 7th, frost nearly destroyed it; 9th, black; 18th, no attempt at growth, as in the case of *Portulaca.*

A. albus. Oct. 11th, destroyed by frost.

Apios tuberosa. Oct. 11th, completely killed by frost in low ground.

Panicum sanguinale. Oct. 8th, more or less destroyed by frost.

Panicum capillare. Oct. 8th, more or less destroyed by frost.

Zea Mays. Oct. 7th, young plants completely frozen; 16th, old plants have been dry for several days.

Sorghum vulgare. Oct. 7th, more or less affected.

Cucurbita Pepo and *C. maxima.* Early in September tips slightly frosted; Oct. 9th, plants black.

Lycopersicum esculentum. Early in September tips slightly affected by frost; Oct. 4th, killed by frost; 9th, plants black.

Borrago officinalis. Oct. 22d, a few leaves affected; 23d, many leaves frozen.

Asclepias Syriaca. Oct. 7th, not affected by frost; 11th, slightly frosted in low places; 24th, completely frozen.

Euphorbia heterophylla. Oct. 7th, slightly frosted; 19th, nearly all leaves frosted.

Vitis riparia. Oct. 8th, slightly frosted.

Vitis—Concord grape. Not affected early in September; Oct. 14th, somewhat frost-bitten, some leaves brown; 21st, leaves much frosted; 22d, all frosted, falling rapidly.

Callirhoe pedata. Oct. 7th, not affected by frost; 16th, seriously affected.

Scabiosa atropurpurea. Oct. 7th, no injury whatever; 23d, no injury; Nov. 11th, no injury; 21st, some injury to leaves.

Adonis autumnalis. Oct. 2d, no injury to leaves; 10th, no injury; Nov. 2, no injury to leaves whatever; 21st, no injury to leaves.

Centaurea Cyanus. Oct. 7th, no injury to foliage; 17th, not affected; 18th, heavy frost, not injured; 22d, still green; Nov.

11th, injured seriously; 21st, old plants killed, young seedlings not.

Verbena Aubletia Oct. 7th, no injury; 21st, no injury; Nov. 11th, no injury except to the young shoots.

Leonurus Cardiaca. Oct. 7th, no injury; 23d, no injury; Nov. 21st, young plants not injured.

Lepachys pinnata. Oct. 9th, no injury; 23d, no injury.

Helianthus annuus. Oct. 7th, no injury; 19th, some injury.

Aster multiflorus. Oct. 10th, no injury; 22d, no injury.

Solidago rigida. Oct. 8th, no injury; 10th, no injury; 23d, no injury; Nov. 21st, some leaves injured.

Ligustrum vulgare. Oct. 7th, no injury; Nov. 21, leaves apparently uninjured, reddish green.

Amygdalus Persica. Oct. 19th, no injury, leaves green; heavy frost on 18th; 21st, no injury; Nov. 15th, leaves on young tree green; snow and heavy frost on 14th.

Phlox Drumondii. Oct. 25, no injury; Nov. 1, no injury.

Populus alba. Oct. 11th, no injury, leaves green; 30th, leaves on top branches yellow, the others yellowish green, no injury; Nov. 11th, some leaves black, ice formed during night; 15th, leaves all black.

IV.—Late Flowering Plants.

Scabiosa atropurpurea. In flower Nov. 11th; blooms till killed by frost.

Centaurea Cyanus. In flower Nov. 2d; does not cease flowering till it is completely killed.

Adonis autumnalis. Nov. 21st, flowers came out after a very hard frost.

Gilia capitata. Nov. 2d, in flower; first hard frost affected flowering somewhat.

Lepachys pinnata. Oct. 23d, in flower; first hard frost affected flowering; plants grew near a building, otherwise flowering had ceased about three weeks sooner.

Saponaria officinalis. Oct. 8th, in flower in an open garden.

Solidago rigida. Oct. 23d in flower; only one plant in garden was observed; all others ceased to flower some time ago.

Reseda odorata. Oct. 21st, still in flower, not abundant; frost checked flowering.

Callirhoe pedata. A few plants in flower Nov. 2d.

Phlox Drummondii. In flower Nov. 1st, only sparsely.

Pilea pumila In flower Oct. 8th.

Phleum pratense. In flower Oct. 12th.

Gaura Lindheimerii. In flower Oct. 22d.

Oxalis corniculata. In flower Oct. 22d; plants revived after a frost early in October.

Botanical Notes.

The Compilation of the Systematic and Alphabetic Index of New Species of North American Phanerogams and Pteridophytes, published in 1892, is now in preparation at the United States National Herbarium. The index will be more nearly complete and published at an earlier date if all botanists will promptly send to Dr. Vasey, Chief of the Botanical Division, their recent monographs and reprints of articles in botanical works.

Plantæ Schlechterianæ. The undersigned has been fortunate enough to induce a German gardener, Herr Schlecter, established in the Cape Colony, to participate in the publishing of botanical collections from South Africa, and to make an agreement with him concerning the enterprise.

The several centuries are to be distributed at regular intervals; the disposition of the material is left to the choice of the undersigned in concert with various monographers. The first six hundred or even one thousand numbers are destined to be distributed in the course of this year, and have their origin in the sonthern corner of the colony; they are well prepared and perfectly dried.

In accordance with my advice Schlechter has now gone to the northeastern districts of the colony, intending to follow up his explorations in the Transvaal, etc., during the next year. Provided the sale of the first centuries, destined to be given out before the end of the year, be regular and ascertained, the separate price for those of this as well as of next year, will be thirty-

five francs. This amount will have to be paid after the receipt of each century.

Inquiries and commissions are to be addressed to the undersigned.

DR. HANS SCHINZ,
Professor of Botany at the University, Zurich, Switzerland.

Index to Recent Literature Relating to American Botany.

Anhalonium Lewinii. (Monats. Kakteenk i. 93).

Aristolochia Sipho. (Gard. and For. v. 509; illustrated).

Aster surculosus. (Gard. and For. v. 520, with figure).

Botanical Laboratory—The. G. H. Hicks. (The Speculum, xii. 51).

A description and illustration of the Botanical Laboratory of Agricultural College, Michigan.

Botanical Notes from Central Texas. E. N. Plank. (Gard. and For. v. 351).

Quercus Durandii, Q. macrocarpa, Dalea frutescens, Lonicera albiflora, Vernonia Lindheimeri, Prosopis juliflora, Sapindus acuminatus, Ungnadia speciosa, Solanum heterodoxum, Pellæa ternata, Philibertia undulata, Desmodium Wrightii, Galactia heterophylla, Talinum lineare, Oxalis vespertilionis, Cassia Lindheimeri, C. pumilio, Mollugo Cerviana, Cissus stans, C. incisa, C. Ampelopsis and *Rubus trivialis* are among many interesting plants noted from near Lampasas and Llano.

Botany. (Ottawa Nat. vi. 113).

Among other interesting notes *Asplenium Ruta-muraria* is reported as occurring in the Province of Ontario, it previously not having been known north of Vermont and Michigan. Three northwestern plants, *Helianthus rigidus, Lepachys columnaris* and *Grindelia squarrosa* are also reported as introduced into Canada. So is also *Euphorbia marginata.*

Brunissure et la Maladie de Californie—La. P. Viala et C. Sauvageau (Journ. de Bot. vi. 378).

With illustration of *Plasmodiophora Vitis,* n. sp.

California Vine Disease—The. Newton B. Pearce. (U. S. Depart. Agric. 1892; illustrated).

The preliminary report of investigations covering a period of

fifteen months in California as well as in France, Italy and North Africa.

Calochortus Kennedyi. J. G. Baker. (Bot. Mag. t. 7264).
A native of California and Arizona.

Carludovica microcephala. J. D. Hooker. (Bot. Mag. t. 7263).
A native of Costa Rica.

Catasetum Hookeri, Lindl. R. A. Rolfe. (Gardn. Chron. xii. 488).

Cereus Hildmannianus. K. Schum. (Monats. Kakteenk i. 55, with illustration).

Cereus Queretaroensis, Web. A. Mathsson. (Monats. Kakteenk. i. 28).

Chamædorea stolonifera. J. D. Hooker. (Bot. Mag. t. 7265).
A palm native of South Mexico.

Descriptions of New Plants Collected in Mexico by C. G. Pringle in 1890 *and* 1891, *with Notes upon a few other Species.* B. L. Robinson. (Proc. Amer. Acad. xxvii. 165, reprint).

The following thirty-eight plants are described as new: *Cleome Potosina, Viola reptans, Æschynomene petræa, Vigna luteola,* var. *angustifolia, Vigna strobilophora, Cæsalpinia multiflora, Lopesia angustifolia, Oldenlandia Pringlei, Valeriana albonervata, Eupatorium Lemmoni, Xanthocephalum tomentellum, Bellis purpurascens, Erigeron heteromorphus, Melampodium longipilum, Sabazia Michoacana, Gymnolomia canescens, Tithonia brachypappa, Verbesina Potosina, V. Pringlei, Spilanthes Beccabunga,* var. *parvula, S. disciformis, Leptosyne pinnata, Flaveria anomala, Porophyllum Pringlei, Cnicus excelsior, Perezia Michoacana, Androsace (?) cinerascens, Dictyanthus tuberosus, Gonolobus suberiferus, Phacelia namatostyla, Lithospermum calcicola, L. revolutum, Ipomœa ornithopoda, Beloporone fragilis, Habenaria Pringlei, Tigridia pulchella* and *Tradescantia angustifolia.* Two new genera are established. *Geissolepis* in the *Compositæ* (*Galinsogeæ*) with one species *G. suædæfolia* and *Coulterophytum* of the *Umbelliferæ* (*Selineæ*) also with one species *C. laxum.*

Destructive Disease Affecting Native Plums—A. John Craig. (Ottawa Nat. vi. 109).

With an illustration of *Cladosporium carpophilum,* and notes on its occurrence on various kinds of American plums.

Development of the Ovule of Aster and Solidago—The. Geo. W. Martin. (Am. Nat. xxvi. 954).

Echinocactus Grusonii, Heldm. (Monats. Kakteenk. i. 4; illustrated).

A rare Mexican species.

Einteilung der Kakteen nach der Salmschem System. (Monats. Kakteenk. i. 156).

Flora of West Virginia. C. F. Millspaugh. (Bull. No. 24, West Va. Agric. Exper. Sta. Vol. II. No. 12, pp. 315–538, Charleston, 1892).

This is a preliminary catalogue of the Flora of West Virginia, a State from which we have hitherto had but little definite botanical information. 1,645 species, varieties and forms are listed, and their distribution indicated, with numerous critical notes of interest and importance. Dr. Millspaugh has fearlessly taken up old generic and specific names, so that his catalogue is a valuable contribution to the nomenclature question. Among the genera accepted as replacing those used in the ordinary text-books are *Bicuculla* for *Dicentra*, *Neckeria* for *Corydalis* (on the last page of the book Dr Millspaugh notes that there is also a moss genus *Neckeria*, and questions which is the older; the Fumariaceous genus has priority; *Beurera* for *Calycanthus*, *Therofon* for *Boykinia*, *Deeringia* for *Cryptotænia*, *Lacinaria* for *Liatris*, *Ridania* for *Actinomeris*, *Adopogon* for *Krigia*, *Pseva* for *Chimaphila*, *Physalodes* for *Nicandra*, *Kœllia* for *Pycnanthemum*, *Agastache* for *Lophanthus*, *Malaxis* for *Microstylis*, *Leptorchis* for *Liparis*, *Gyrostachys* for *Spiranthes*, *Chrosperma* for *Amianthium*, *Chamæraphis* for *Setaria*, *Sieglingia* for *Triodia*, *Corycarpus* for *Diarrhena*, *Panicularia* for *Glyceria*, and *Hystrix* for *Asprella*.

The novelties described are *Syndesmon thalictroides* forma *rosea*; *Delphinium tricorne*, forma *albiflora*; *Polygala sanguinea*, forma *albiflora*; *Rubus odoratus*, var. *Columbianus* (whatever suggested the varietal name?); *Hydrangea arborescens*, var. *Kanawhana* (this may be *H. glauca*, Raf.); *Œnothera fruticosa*, var. *differta*; *Daucus Carota*, forma *rosea*; *Sambucus racemosa*, forma *albicocca*, Britton; *Houstonia cærulea*, forma *albiflora*; *Lobelia inflata*, var. *simplex* (Raf.); *Scutellaria galericulata*, forma *albiflora*; *Polygonum Persicaria*, forma *albiflora*; *Acaly-*

pha Virginica, forma *intermedia*; *Brachyelytrum aristosum*, var. *glabratum*, Vasey; *Polypodium vulgare*, forma *biserratum*; *Dicranodontium Virginicum*, E. G. Britton; *D. Millspaughii*, E. G. Britton (figured), and *Plagiochila Virginica*, Evans (figured).

The issuing of this catalogue will doubtless be a great stimulus to further botanical exploration in the State. Dr. Millspaugh has only been able to visit a small portion of the territory during the two years that he has had the work in hand, and the number of working botanists in the region is few. We have no doubt that further study will go far towards doubling the number of plants which he has been able to report. The whole country south of Pennsylvania still offers a most attractive ground for collectors, and we hope that it will not be long allowed to await careful search. N. L. B.

Gebirgsflora Alabama's—Die. Carl Mohr (Pharm. Rund. x. 253).

Grasses of the Pacific Slope. George Vasey (U. S. Depart. Agric. Bull. No 13, Washington, 1892).

This fine volume is part I. of Dr. Vasey's work on the grasses of the west coast and contains fifty descriptions and plates of species, many of which are there illustrated for the first time. The plates are up to the usual high standard of excellence and beauty for which the department is famed and the value of the book as a work of reference is greatly enhanced by the citation of the place of publication of the species described. The latter are *Panicum Urvilleanum*, *Cenchrus Palmeri*, *Phalaris amethystina*, *P. Lemmoni*, *Hierochloa macrophylla*, *Aristida Californica*, *Stipa coronata*, *S. eminens*, *S. Kingii*, *S. occidentalis*, *S. Parishii*, *S. setigera*, *S. speciosa*, *S. Stillmani*, *S. stricta*, *Oryzopsis exigua* *O. Webberi*, *Muhlenbergia calamagrostidea*, *M. Californica*, *M. debilis*, *M. dumosa*, *M. Parishii*, *Alopecurus alpinus*, *A. Stejnegeri*, *A. Californicus*, *A. geniculatus*, L. var. *robustus*, *A. Howellii*, *A. Macounii*, *A. saccatus*, *Agrostis æquivalvis*, *A densiflora*, *A. exarata*, forma *asperifolia*, *A. Hallii*, *A. humilis*, *A. tenuis*, *Calamagrostis Aleutica*, *C. Bolanderi*, *C Breweri*, *C. crassiglumis*, *C. Cusickii*, *C. densa*, *C. deschampsioides*, *C. Howellii*, *C. purpurascens*, *C. Tweedyi*, *Deschampsia cæspitosa*, var. *arctica*, *Trisetum Californicum*, *T. canescens*, *T. cernuum*, *Orcuttia Californica* and *O. Greenei*.

Herbarium Indexes for all the groups of Cryptogams. A. B. Seymour (Cambridge, Mass. Sept. 1892—27 sheets, blue prints. 8×10, price $1.00).

These include only such genera as occur within the United States, and are after the plan of those in use for Phanerogams in the Gray Herbarium. The genera are arranged alphabetically, prefixed by numbers to indicate their systematic order, and will be of great service to all those who limit their collections to this country.—E. G. B.

Hibiscus Moscheutos (Meehan Month. ii. 161. Illustrated).

Kakteen aus dan Staate Vera Cruz. A. Mathsson (Monats. Kakteenk. i. 79).

Lady's Slippers—Hardy (The Garden, xlii. 386). With a colored plate of *Cypripedium acaule and C. pubescens.*

Mamillaria obscura. H. Heldmann (Monats. Kakteenk. i. 52).

Mamillaria Schumannii, Heldm. (Monats. Kakteenk. i. 89, with illustration).

Mangrove Tannin. Henry Trimble (Contr. Bot. Lab. Univ. Penn. i. 50).

With an illustration of a grove of *Rhizophora Mangle.*

Melilotus alba, L.—Preliminary Observations on the Movements of the Leaves of. W. P. Wilson and Jesse M. Greenman. (Contr. Bot. Lab. Univ. Penn. i. 66 with 5 plates.)

Montreal Island—The Flora of. Robert Campbell. (Can. Rec. Sci. v. 208).

Moorea irrorata. J. D. Hooker (Curt. Bot. Mag. xlviii. t. 7262). An orchid from the Andes of South America.

Mountain Flora of Alabama—The. Charles Mohr. (Gard. and For. v. 507).

Oaks of North America (Hardwood ii. No. 8).

Oak-pruners—The. John B. Smith. (Gard. and For. v. 557. Illustrated).

Pilocereus senilis cristatus. A. Mathsson. (Monats. Kakteenk. i. 32. Illustrated.)

Pinus edulis. (Gard. Chron. xii. 563. Illustrated).

Phyllocactus Phyllanthus, Lk. (Monats. Kakteenk. xi. 72. Illustrated). Notes on this Brazilian species.

Plant Diseases—Report on the experiments made in 1891 *in the Treatment of.* (U. S. Depart. Agric. Washington, 1892. Illustrated).

Plantain—A Rare. H. P. Keyes (Gard. & For. v. 550). Note on the discovery of *Plantago media*, at Framington, Maine.

Post Laramie Beds of Middle Park, Colo. Whitman Cross. (Read before the Colo Sci. Soc. Oct. 3, 1892. Pamph. 8vo, pp. 27).

Under the heading, "Age of the Middle Park Bed," the author utilizes the evidence afforded by fossil plants to determine the age of certain beds. He criticises their reference by Lesquereux to the Laramie Lignitic group and shows that this reference was probably due to an attempt to make the plants fit in the place where the stratigraphical geologists thought they ought to belong, combined with a manifest disarrangement of labels. A careful revision of the specimens upon which Lesquereux's conclusions were founded, in addition to new material since collected leads the author to conclude that the Middle Park beds are post-Laramie in age. A list of twenty-eight species of fossil plants is included. A. H.

Quercus densiflora (Gard and For. v. 517. Illustrated).

Rudbeckia hirta, L.—A. Monstrous Specimen of. J. T. Rothrock (Contr. Bot. Lab. Univ. Penn. i. 3. Illustrated).

Sequoia gigantea—A Museum Specimen of (Gard. & For. v. 451.)

Two illustrations and a most realistic description of the felling of one of the giant Redwoods in Fresno Co. Calif. are given. The particular tree figured girthed sixty-two feet at eight feet from the ground and ninety feet at the surface and a section of the trunk twenty feet in diameter is now on exhibition in the Jesup collection of American woods in the American Museum of Natural History.

The Flora of the Dakota Group. A posthumous work by Leo Lesquereux. Edited by F. H. Knowlton. (Monograph no. xvii. U. S. Geol. Survey, pp. 400, including 66 plates. Washington, 1891).

In this volume we have the latest contribution to our knowledge of the cretaceous flora of North America. The work will always be known as that of Prof. Lesquereux, but the laborious and thankless work of the editor should not be lost sight of. The

editor of a posthumous work has always a delicate position to fill, as he is constantly called upon to choose between allowing real or apparent errors to remain or correcting them to the best of his ability and perhaps making the author say what he never intended to say. In this volume the editor has adopted a conservative course, preferring to suffer criticism from modern purists rather than to alter the manuscript, or known preferences of Prof. Lesquereux except in cases where errors of importance were manifest. A short sketch of the life and work of Prof. Lesquereux is included in the author's preface, whrch is followed by an account of the discoveries in various localities of the flora recognized as belonging to the Dakota group. An interesting general discussion or analysis of the flora occupies about thirty pages in which attention is called to the significance of many of the facts involved. There is no doubt that many of the problems connected with the study of the geographical distribution of plants at the present day could be solved, at least in a large measure, by a careful comparison of the extinct flora with that now in existence in the same locality and the more nearly we approach modern times the more significant are the results which are obtained. Thus in regard to the present work the author says: "Already the evidence obtained from the study of the Dakota Group remains warrants the conclusion that the flora of North America is not at the present epoch, and has not been in past geological times composed of foreign elements, brought to this continent by migration, but that it is indigenous. Its types are native; the diversity of their representatives has been produced by physical influences; their affinities, therefore, or the relation of their modification or derived forms can not be looked for in the vegetation of distant countries." To the botanist the principal interest will center in the Dicotyledones, which constitute the bulk of the work. Most of them are referred to living genera or genera so nearly allied that their affinities are indicated by such names as *Rhamnites*, *Celastrophyllum*, *Menispermites*, *Palæocassia*, *Viburnites*, *Populites*, etc., early ancestors of our familiar trees and shrubs of to-day. In this connection, from among the many interesting examples, attention might be called particularly to the species figured under the genus *Liriodendron*,

in which some dozen forms of great variety are shown, represented to-day by our one species, *L. Tulipifera.*

The one serious criticism which might be made is one which could be applied to nearly every recent work on palaeobotany, viz.: the unnecessary multiplication of species and varieties Leaf forms which vary between themselves far less than do the leaves on many an individual tree or bush are given varietal or specific rank. Even some genera are founded upon such slight differences that they are open to suspicion. In this connection attention might be called to Plates iv. and v., where *Betulites Westii* and *B. Snowii* with their varieties are figured. If such species and varieties are to be considered in the same sense as they are considered in botany, that is as representing each a distinct type of tree or shrub, then there should certainly be an earnest protest entered against the abuse of this too prevalent custom. Minor flaws might be picked out, such as the method of numbering on the plates, by which the figures and their corresponding numbers are sometimes so arranged that in case of hasty reference confusion might ensue. The scientific value of the work, however, is what concerns the student and by him it will be heartily welcomed, especially so as a large number of the types described are identical with those from the cretaceous of Eastern North America and are familiar objects in the clays of New Jersey and southward. A. H.

Trees of the Northern United States, their Study, Description and Determination, for the Use of Schools and Private Students. Austin C. Apgar. (Small 8vo., pp. 224; illustrated).

Professor Apgar has written a very useful little book, that will doubtless do much toward spreading an interest in trees and their study. He gives good and concise botanical descriptions of all the species, both native and introduced, that have come under his notice as growing north of Virginia and Missouri and east of the Rocky Mountains, accompanied by illustrations of their foliage and in some instances of flowers and fruit; these illustrations have been very well drawn, and for the most part well selected. We note an apparent mistake on page 100, where the leaves of *Prunus Virginiana* and *P. serotina* have evidently been transposed in the make-up of the book, the obovate leaf

attributed to *P. serotina* being characteristic of the other tree; the leaf illustrating *Cratægus tomentosa* is badly chosen and that taken for *C. coccinea* is hardly typical.

The book is written in a much more scientific vein than Mr. Newhall's "Trees of Northeastern North America," and the cuts are superior to those in that work. The descriptive portion is prefaced by chapters on roots, stems and branches, leaves, flowers and fruit, the winter study of trees, the preparation of a collection, figures used in description and a plan and models for tree description.

The author has made a very serious mistake in using the nomenclature of Gray's Manual, rather than the principles adopted by Professor Sargent in his Silva and in Garden and Forest, and by the officials of the Forestry Division of the United States Department of Agriculture. There is no doubt that this will seriously limit the usefulness and circulation of his book.

N. L. B.

Proceedings of the Club.

WEDNESDAY EVENING, OCTOBER, 26, 1892.

Vice-President Allen in the chair and seventeen persons present.

Mr. Wm. H. Smith, Miss Idalette Carpenter, Dr. Georgia A. Cassidy, Dr. Helen O'Connor and Mr. G. H. Van Wagenen were elected active members.

The resignation of the Secretary, Mrs. M. O. Lebrun, was then read and accepted after some remarks by Dr. Morong, in which he expressed the appreciation of the entire club, of the long and efficient services rendered by Mrs. Lebrun as Secretary. Upon motion of Dr. Morong, a vote of thanks was unanimously extended to Mrs. Lebrun. Dr. Britton then moved that a committee of two be appointed by the Chair to make arrangements for expressing in tangible form the feelings of the Club as expressed in Dr. Morong's motion. The motion was seconded and unanimously adopted, and Mrs. E. G. Britton and Dr. Emily L. Gregory were appointed such committee.

Dr. Rusby was elected Secretary of the Club.

Dr. Morong, read the two announced papers of the evening

viz., "Notes on a Revision of the North American Naiadaceæ," and "Observations on the North American Species of Orchidaceæ and their Nomenclature." At the close of the reading of his paper, Dr. Morong spoke of the great desirability of having his paper on the Naiadaceæ, which was to be published in the Memoirs of the Club, well illustrated, and hoped that it might be possible to make arrangements to this end. Dr. Britton remarked upon the same subject, and moved that a committee consisting of the Treasurer, Secretary and Editor, be appointed to devise ways and means for such illustration which it was estimated would require about $250 more than could be spared from the funds of the Club. The motion was seconded and unanimously carried.

TUESDAY EVENING, NOVEMBER 8th, 1892.

The President in the chair and seventeen persons present. Miss C. A. Timmerman was elected Secretary pro tem.

The announced papers of the evening were then read. The first was by Mr. John K. Small, "Preliminary Notes on a Monograph of the American Species of the Genus *Polygonum*," illustrated by herbarium specimens; several new species were shown.

Mr. Hogg spoke of a dye used in Japan and made from a species of *Polygonum*.

The second paper was read by Mrs. Britton, "Remarks on Some Mosses of Northern New York." Mrs. Britton stated that this was a particularly rich region for Bryophytes. *Dicranum viride* had been discovered in fruit. *Zygodon conoideus*, sterile, which had been found fruiting in Virginia during the past spring, had also been collected, these being the only two stations known for this genus in North America.

DEATH OF DR. NEWBERRY.

Dr. John Strong Newberry, for many years President of the Club, died at his home, in New Haven, Conn., on Wednesday evening, December 8th. An account of his life and important contributions to North American Botany will appear in an early number of the BULLETIN.

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In response to a demand for special mounting paper to mount plants for the World's Fair, I have made a lot of Gray Herbarium Standard Mounting Paper in extra heavy weight, 11½ x 16½, 28 lbs. This is the weight I make for Messrs. Pringle and Peck. The usual weight, 11½ x 16⅝, 19 lbs. can be supplied now and to special advantage in early spring; also all kinds and grades of botanical paper.

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VOL. XIX. NOVEMBER, 1892. No. 11.

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